

Francisco Patitucci

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Education

- University of Texas at Austin**, PhD in Electrical Engineering Fall 2023 – Spring 2028
Optimization for Machine Learning. Advisor: **Prof. Aryan Mokhtari**. (Expected)
• Selected coursework: Convex Optimization, Advanced Probability, Statistical Machine Learning.
- Universidad de Buenos Aires**, MSc in Mathematical Engineering Fall 2021 – Transferred to UT
Signal Processing Track
• Selected coursework: Stochastic Processes, Statistical Learning, Optimization, Matrix Analysis.
- Universidad Nacional de La Plata**, Engineering Degree in Aerospace Spring 2016 – 2021

Experience

- Graduate Research Assistant** — Aryan Mokhtari Group, UT Austin Fall 2023 – Present
• Developed theoretical and empirical tools for stochastic, nonconvex, and adaptive optimization methods.
• Designed and implemented adaptive optimization algorithms in Python/PyTorch for deep learning.
• Ran large-scale optimizer benchmarks on HPC clusters using Slurm, evaluating convergence, stability, and robustness on language models up to 350M parameters.
• Built reproducible experiment pipelines for learning-rate sweeps, momentum configurations, random seeds, and model-scale comparisons.
- Research Assistant** — Paul Puleston Group, UNLP Jan 2021 – Aug 2022
• Implemented and deployed a turbine-emulator control module in C/MATLAB, improved the user interface, and deployed the system to a microcontroller.

Selected Publications

- F. Patitucci, A. Mokhtari. *Adaptive Optimization via Momentum on Variance-Normalized Gradients*. arXiv preprint, 2026.
- F. Patitucci, R. Jiang, A. Mokhtari. *Improving Online-to-Nonconvex Conversion for Smooth Optimization via Double Optimism*. **ICLR 2026**.
- R. Jiang, A. Mokhtari, F. Patitucci. *Improved Complexity for Smooth Nonconvex Optimization: A Two-Level Online Learning Approach with Quasi-Newton Methods*. **STOC 2025**.

Honors and Awards

- Gold Reviewer Award** — International Conference on Machine Learning (ICML) 2026
- Graduate Research Fellowship** — UT Austin Fall 2023 – Fall 2027
- Travel Award** — ACM Symposium on Theory of Computing (STOC) 2025
- Fulbright Scholarship** (declined) — Fulbright Argentina 2023
- Ing. Isidoro Marín Medal** — National Academy of Engineering, Argentina 2022

Skills

- Programming:** Python, PyTorch, NumPy, MATLAB, C/C++ basics
- ML / Systems:** optimizer implementation, distributed training, language-model training, hyperparameter sweeps
- Infrastructure:** Slurm/HPC, Linux, Git, Bash, \LaTeX
- Languages:** Spanish (native), English (fluent)